

# SIEMENS

PATENT  
Attorney Docket No. 2002P17478WOUS

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Inventor: M. Herbst ) Group Art Unit: 3745  
)  
Serial No.: 10/532,173 ) Examiner: White, Dwayne J.  
)  
Filed: 03/27/2006 ) Confirmation No. 6185

Title: WIND POWER UNIT WITH STRUCTURED SURFACES FOR  
IMPROVEMENT OF FLOW

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### APPELLANT'S REPLY BRIEF

Sir:

Pursuant to 37 C.F.R. § 41.41, this Reply Brief is responsive to the Examiner's Answer mailed 8 December 2009 in which the Examiner raised new substantive points of argument. This Reply Brief is not a substitute for the Appeal Brief. Any ground for rejection in the Examiner's Answer that is not refuted herein is considered by Appellant to have been sufficiently argued in the Appeal Brief, such that no further comment is needed herein. Arguments herein focus on errors and new arguments presented in the Examiner's answer.

(Please proceed to the following page.)

**Response to New Point of Argument: The Hickey Reference Does Not Disclose Hemispherical Shapes**

First, it is noted that at page 6 of the Examiner's Reply, it is again incorrectly argued that, contrary to Appellant's position, the prior art does disclose recesses having shapes in accord with the shape of a hemisphere. Essentially, the basis for the argument is that in some embodiments of the Hickey reference only "only" one concave indentation 32 includes protruding deviations (see Figure 4) while surrounding concave indentations (see Figures 1 and 2) 30a – 30e do not have protruding deviations. The Appellant's Brief does not fully address this new point of argument presented in the Examiner's Answer. Appellants respond as follows.

With regard to the central deviation 32 of Hickey, col. 2, lines 27-31 indicate that "Disposed on at least one deviation from among the first surface deviations is a second plurality of surface deviations such as deviation pattern 33 disposed on central deviation 32 ..." There does not appear to be any disagreement between the Appellants and the Examiner with regard to whether the Hickey reference discloses for some embodiments the surface deviations (referred to by the Examiner as concave indentations) may lack protruding deviations. However, there is still not sufficient disclosure in the Hickey reference to find (e.g., per claim 11)

a plurality of recesses *each having a shape in accord with the shape of a hemisphere*, each recess positioned the same distance from all adjacent recesses ...

This is because the Hickey reference discloses "flow altering surface deviations" as stated at col. 2, lines 22-23. The rejection relies upon sets of such surface deviations arranged in spiral patterns 12 – 20 (col. 2, lines 21-23) including "deviation sets 30a – 30e which radiate from central deviation 32." See col. 2, lines 25 – 27. However, at most, the Hickey reference only describes some of these surface deviations as concave (e.g., the central deviation 32 shown in Figure 4 is described as concave; see col. 2, lines 46 – 49).

The disclosure of Hickey does not provide the above-quoted recitation for at least two reasons. The first reason is that there is simply no disclosure regarding the shape of the deviation sets 30a – 30e which radiate from central deviation 32 except for what is shown schematically in Figure 2. Even though one can reasonably conclude from Fig. 2 that the deviation sets 30a – 30e which radiate from central deviation 32 are of concave shape, this is not the same as providing a hemispherical shape. A hemispherical shape requires a constant radius of curvature

and there is no reason that such shapes (always referred to as surface deviations) should have hemispherical shapes. There is no teaching in the Hickey reference for provision of any hemispherical shapes at all. None of the other art of record compensates for this deficiency.

**Irregardless as to Whether the Hickey Reference Discloses Hemispherical Shapes, Clear Deficiencies Still Exist in the Prior Art Combinations**

A second reason that the disclosure of Hickey does not disclose or suggest (per claim 11) “a plurality of recesses each having a shape in accord with the shape of a hemisphere, each recess positioned the same distance from all adjacent recesses ...”

is that it has no suggestion of the structural limitation wherein **each recess is positioned the same distance from all adjacent recesses.**

As noted at page 7 of the Appeal Brief, in order to sustain a rejection of the claims the prior art must teach or suggest **all** of the claim limitations. That is, all of the claimed features must be found in the prior art. The Examiner’s Answer does not carry this burden and thus fails to make a prima facie case of obviousness. Examples pertinent to each of the independent claims 11, 22 and 25 now follow.

At page 3 of the Examiner’s Answer the grounds for rejection based on Hickey in view of Olsen (applied simultaneously to all three independent claims as well as dependent claims 12, 15 – 17, 19 – 24 and 26 – 30) are made in a single paragraph without identifying each and every one of the elements recited in the claims, and without fully identifying citations in the prior art that disclose or suggest all of the claimed features. At page 5 of the Examiner’s Answer the grounds for rejection based on Hickey in view of Wobben (applied simultaneously to independent claim 11 as well as dependent claims 17 and 18) are made in a single paragraph without identifying each and every one of the elements recited in the claims, and without fully identifying citations in the prior art that disclose or suggest all of the claimed features. Examples now follow.

In this regard, independent claim 11 expressly requires that for at least one rotor blade having a plurality of recesses each having a shape in accord with the shape of a hemisphere,

“each recess [is] positioned the same distance from all adjacent recesses ...”

The rejection does not at all address this feature. Appellant, on the other hand, has argued that, as can be seen from the star-shaped design of pattern 67 (see Figure 5 of the Hickey reference), numerous recesses on different rays of the star which are adjacent one another are spaced apart varying distances from one another. This is also true for the spiral patterns shown in Figures 1 and 2 of the Hickey reference.

Similarly, independent claim 22 calls for an arrangement wherein, for a plurality of recesses each having a shape corresponding to that of a contour of a hemisphere:

“each recess [is] positioned the same distance from all adjacent recesses ...”

As done for claim 11, Appellant also argued that, as can be seen from the star-shaped design of pattern 67 (see Figure 5 of the Hickey reference), numerous recesses on different rays of the star which are adjacent one another are spaced apart varying distances from one another.

Finally, with respect to independent claim 25, the mast or one of the plurality of rotor blades includes ... a plurality of recesses” wherein

“each recess [is] positioned the same distance from all adjacent recesses ...”

Appellant’s argument for claim 25 makes note of the above argument for claims 11 and 22 to affirm the same deficiency in the Hickey reference relative to claim 22.

The Examiner’s Answer now argues (see page 6, last line through page 7, line 1) that the alternating flow eddies of claim 11 (which assist with continued laminar flow) are inherently present in recesses of the prior art. First, even if this were true, it would not provide for all that is claimed. Second, it is not seen how this feature as claimed could be inherently present in a combination of references (under Section 103) when the prior art does not disclose Appellants’ claim structure wherein “each recess [is] positioned the same distance from all adjacent recesses ...” The functional language of independent claims 11, 22 and 25 is tied to structure not found in the prior art and the prior art does not disclose the recited function.

The Examiner’s Answer only appears to focus on the presence of a limited number of claimed features which can be found in the prior art, then skips over structural limitations missing from the prior art. It is well understood that an art rejection must find all of the elements or provide some basis for modifying the references to meet the terms of the claimed

combination. In this instance the prior art has not been and cannot be applied to show that for a plurality of recesses “each recess [is] positioned the same distance from all adjacent recesses” as recited above for one or more of the independent claims.

In view of the above deficiencies *it is also urged that the argument beginning at page 7, line 11*, relating to the following features of the independent claims *is therefore deficient*. That is, in view of the above-noted deficiencies, the rejection incorrectly contends that Appellants do not claim any additional structure (relative to the prior art) to create the recited flow eddies.

Argument ion the Examiner’s Answer incorrectly concludes that the claim language is merely functional. But the rejection ignores that **the claims do not merely recite functional language for the flow eddies**. Rather, based at least in part on the structural configuration of having *each recess positioned the same distance from all adjacent recesses*, the following features are provided:

**for claim 11:**

[with the configuration of having] each recess positioned the same distance from all adjacent recesses ...

“as the air sweeps past a recess, alternating flow eddies form in the recess that assist with continued laminar flow of the air while also reducing flow resistance along the surface relative to flow in the absence of the recesses ...”

**for claim 22:**

[with the configuration of having] each recess positioned the same distance from all adjacent recesses,

“the shape and configuration of the recesses are designed such that as the air sweeps past a recess, one or more eddy flows form in the recess that assist the passage of the air at reduced resistance relative to conditions in the absence of the recesses, and *wherein a pattern of the alternating flow eddies develop over the surface, extending from one recess to a next recess in the array as a function of air flow speed.*”

**for claim 25:**

[with the configuration of having] each recess positioned the same distance from all adjacent recesses,

“the recesses configured as an array of design such that, as the air sweeps past the recesses, flow eddies form in the recesses that assist with the passage of air flow at reduced resistance relative to flow in the absence of such recesses ...”

In view of the above distinctions, and the absence of any indication to the contrary, there is no basis to argue that the following claimed features are present (inherently or otherwise) in the prior art:

**for claim 11:** to improve flow ... in the region between the transition point between laminar and turbulent flow ... the shape and configuration of the recesses are designed such that,

- (1) the mast characterized by a *transition point* along the flow path wherein a flow portion: (i) has *predominantly laminar characteristics* when travelling *toward the transition point*; and (ii) is characterized by *turbulent flow* when travelling *away from the transition point*, and
- (2) the transition point is positioned relative to a second point on the mast coinciding with the maximum width such that the flow portion first passes along the second point before passing the transition point.

**for claim 22:** a pattern of the alternating flow eddies develop over the surface,

extending from one recess to a next recess in the array as a function of air flow speed.

**for claim 25:** *the array being operatively positioned* in a region on the surface along which the air flow passes

*to cause, in the presence of flowing air, a point along the direction of the air flow at which transition between laminar and turbulent flow occurs under the force of air flow, to be displaced in the direction of the air flow, so that resistance to the air flow is reduced.*

## Summary

In summary, the argument presented in the Examiner's Answer is based on an incorrect finding of that all of the recited structure is found in the prior art. The configuration of having "each recess positioned the same distance from all adjacent recesses" is absent. Appellants also argue that there is not disclosure, express or implied, of the requisite "shape in accord with the shape of a hemisphere." The incorrect findings led to another incorrect conclusion: that all of the recited function in the claims is also present in the prior art. Appellants have urged that none of the prior art (i) provides the claimed structure; (ii) none of the prior art discloses the functional language noted above; and (iii) there is no basis on which to argue that the claimed combinations are present in the prior art.

Thus, the Examiner has not properly carried the burden of demonstrating obviousness. Contrary to argument beginning in the last paragraph at page 7 of the Examiner's Answer, Appellants do not merely argue that the prior art fails to explicitly disclose the same functions as claimed. Rather, it is argued that the requisite configurations (i.e., structure), which form a basis for the functional language, are absent. With this structural deficiency the prior art does not provide the above-recited features, e.g., **for claim 22:** *a pattern of the alternating flow eddies ... extending from one recess to a next recess in the array as a function of air flow speed.*

## Conclusion

Argument presented in the Examiner's Answer fails to identify the requisite support to sustain any of the art rejections. In view of the deficiencies identified in the Examiner's Answer, Applicant Appellant again respectfully submits that the rejections are in error. The Board is therefore respectfully requested to reverse the final rejection of the Examiner and to remand the application to the Examiner with instructions to allow all of the pending claims.

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Respectfully submitted,

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